

Chengpo Yan

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Education

University of Wisconsin-Madison | Madison, WI

B.S. in Computer Science & B.S. in Data Science

September 2019 – Fall 2022

- GPA: 4.0/4.0
- Advisor: Prof. Shivaram Venkataraman, Suman Banerjee, and Dane Morgan

Research Interests

My research interests lie in **Distributed Systems**, **Machine Learning Systems**, and **Networking**. For now, I work on Machine Learning Systems with a focus on optimizing systems for Deep Learning Recommendation Model in distributed GPU clusters. I am applying to Ph.D. programs that start in Fall 2023.

Publication

[1] [Conference Paper] BAGPIPE: Accelerating Deep Recommendation Model Training. Saurabh Agarwal, **Chengpo Yan**, Ziyi Zhang, Shivaram Venkataraman – OSDI 2023. *In Submission*.

Research Experience

Undergraduate Research Assistant with Prof. Shivaram Venkataraman | Madison, WI

BAGPIPE: Accelerating Deep Recommendation Model Training

May 2022 – Present

- In this work, we systematically arrange and cache the embeddings required for a Deep Recommendation Model over distributed GPU clusters to optimize the time for fetching and updating embeddings given a parameter server training cluster.
- Implemented a new strategy for optimizing the synchronizations of cache between each worker with NCCL given a training cluster.
- Developed a policy for writing the embeddings that evicted from cache on each worker to a parameter server under distributed GPU clusters.
- Applied BAGPIPE in other Deep Recommendation Models, including W&D, D&C, DEEPPFM, FGCNN, and CASER.
- Achieved up to 5x efficiency win compared to the original DLRM proposed by Meta.

Undergraduate Research Assistant with Prof. Suman Banerjee | Madison, WI

Wi-Fi & Bluetooth Based Indoor Localization

July 2022 – Present

- Explored RSSI and CSI, common indicators from Wi-Fi and Bluetooth devices that can be used for localization.
- Investigated different localization algorithms, including kNN, Stg, CSE, and Gaussian Kernel.
- Used Apple's Airport to collect and generate RSSI dataset for UW-Madison CS Department.

Undergraduate Researcher with Prof. Dane Morgan @ Informatics Skunkworks | Madison, WI

Identifying Defect Formation Mechanisms from X-ray Imaging Data with Machine Learning

Mar 2022 – Present

- Designed a continuous workflow of the entire identification and measurement stream, including image labeling and image measuring.
- Deployed BASNet, a boundary-aware segmentation network to label raw images for measurements.
- Implemented a parallel-based measuring tool for retrieving specific quantities given a labeled data.

Professional Experience

Software Engineer Intern @ Skyworth | Shenzhen, China

Advisor: Dr. Chen

May 2021 – August 2021

- Optimized Swaiot application, an EEUI based cross-platform application for controlling indoor devices through Skyworth AIOT system.
- Developed a theme switching functionality for Swaiot application.
- Adapted Swaiot application on various Skyworth devices, including Skyworth remote control, Skyworth tablet, and Skyworth table.

Web Development Club | Madison, WI

UW-Madison

September 2019 – May 2022

- Designed and deployed the university's webpage, making it more user-friendly.
- Tutored web development frameworks and techniques.

Projects

Matrix Calculator

An Application for Matrix Calculation

March 2020 – May 2020

- In this project, we implemented a JavaFx based local calculation application aiming to provide accessible matrix calculation services for students.
- Planned the general workflow and designed the appearance of the application.

Mini-Twitter

A Mini Web Service that Emulates Twitter

May 2020 – June 2020

- Implemented the web service with Ruby, Rails, MongoDB, Webpacker for online posting service.
- Developed Ajax-based frontend using ReactJS, Redux, and Saga to perform real-time notifications.

UniMatch

A Web Service that Offers Colleges Information and Provides Suggestions

June 2020 - August 2020

- Implemented the web service with ReactJS, Webpacker, Flask, TensorFlow for searching universities.
- Developed python-based backend with Flask and TensorFlow to find the fittest university.
- Continuous deployment and integration with TravisCI.

Relevant Courses

CS: Algorithms, Artificial Intelligence, Computer Architecture, Data Analysis, Networks, Operating Systems, Human Computer Interaction, Virtual Reality

Math: Calculus, Discrete Math, Math in Data Science, Numerical Linear Algebra, Probability

Statistic: R in Data Science, Random Variables

Technical Skills

Programming: Java, Python, C, C#, C++, JavaScript, HTML/CSS, R

Frameworks: Spring, Spark, ReactJS, VueJS, NodeJS, Redux, MySQL, MongoDB, Docker, TensorFlow, PyTorch, CUDA, NCCL, TorchRec

Tools: Git, TravisCI, AWS, NSYS

Awards

- 2018 Meritorious Award on Mathematical Contest in Modeling
- Dean's List from 2019 to 2022 (6 semesters)